WASHINGTON STATE DEPARTMENT OF ECOLOGY

April 2006

CONDITIONAL USE LEVEL DESIGNATION FOR PRETREATMENT (TSS)
For
Stormceptor System®

Ecology's Decision:

Based on Stormceptor Corporation's application submissions and recommendations by the Technical Review Committee (TRC), Ecology hereby issues the following Use Level Designation for the Stormceptor Corporation's Stormceptor System®:

1. **Conditional Use Level Designation (CULD) for pretreatment, as defined in the Ecology Manual Volume I, (a) ahead of infiltration treatment, or (b) to protect and extend the maintenance cycle of a Basic or Enhanced Treatment device (e.g., sand or media filter). This CULD applies to Stormceptor System® units sized in accordance with Table 1 (below) at the water quality design flowrate as determined using the Western Washington Hydrology Model (WWHM):**

Table 1

Unit	Treatment Flowrate (gpm)
STC 450i	143
STC 900	285
STC 1200	285
STC 1800	285
STC 2400	476
STC 3600	476
STC 4800	793
STC 6000	793
STC 7200	1110
STC 11000	1585
STC 13000	1585
STC 16000	2220

2. **The CULD expires on April 31, 2009 unless extended by Ecology.**

3. **All designations are subject to the conditions specified below.**

4. **Properly designed and operated Stormceptor Systems® may also have applicability in other situations (example: low-head situations such as bridges or ferry docks), for TSS removal where, on a case-by-case basis, it is found to be infeasible or impracticable to use any other approved practice. Local jurisdictions should follow established variance or exception procedures in approving such applications.**

5. **Ecology finds that the Stormceptor System® could also provide:**
   - **Water quality benefits in retrofit situations.**
   - **Effective removal of deicing grit/sand in a retrofit application or as a pretreatment step in new or redevelopment situations.**

Ecology's Conditions of Use:

Stormceptor Systems® shall be designed, installed, and maintained to comply with these conditions:

1. **Stormceptor Systems® must be designed, assembled, installed, operated, and maintained in accordance with Stormceptor Corporation's applicable manuals and documents and the Ecology Decision and Conditions specified herein.**

2. **On or before October 31, 2006 Stormceptor Corporation shall submit a QAPP that meets the TAPE requirements for attaining a CULD for TSS removal.**

3. **Discharges from the Stormceptor System® shall not cause or contribute to water quality standards violations in receiving waters.**

4. **Stormceptor Corporation shall complete all required testing and submit a TEER on TSS removal for TRC and Ecology review by October 31, 2008.**

5. **Stormceptor Corporation may request Ecology to grant deadline or expiration date extensions, upon showing cause for such extensions.**

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Stormwater Specialist
Stormceptor Group

Applicant Address: 12 Madison Avenue
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Application Documents:

- Submission for Verification Acceptance, State of Washington Department of Ecology (WADOE), dated May 2005. This document contains the following elements:

    - Submission for Verification Acceptance, including an abridged version of the application and a technical manual
    - Field data, Westwood, MA, 1997
    - Field data, Seatac, WA, 1999
    - Testing summary, Como Park, MN, 1998
    - Testing summary, Edmonton, AB, 1994-6
    - Wisconsin DNR/USGS report, conference paper, and monitoring summary, 1998
    - Laboratory evaluation, done for NJDEP, 2004
    - Coventry University laboratory study, 1996
    - Stormwater hydrology report, Bryant et. al.
    - Canada Environmental Technology Verification report, 2003
    - Massachusetts Strategic Envirotechnology Partnership report, 1998
    - NJCAT certification report, 2005

    With the exception of any files identified as confidential, a CD-ROM containing these submittal documents is available by contacting Stormceptor Corporation.

Applicant's Use Level Requests:

- General Use Level Designation (GULD) for pretreatment.

Applicant's Performance Claims:

- The Stormceptor System® has been shown to attain the State of Washington's pretreatment (TSS) criteria under varying conditions. Laboratory studies were conducted using a realistic particle size distribution. A challenge is presented when the system is expected to provide this level of treatment at the full treatment flow rate for the unit.
- The Stormceptor System® has been proven to remove material finer than 500 microns. It is not designed to remove litter and debris.
- The Stormceptor System® removes a large portion of material on a long-term basis, thereby preventing material from entering a difficult-to-maintain system such as a filtration system or wet pond, extending its maintenance cycle. It also provides protection for petroleum hydrocarbon spills.
- The Stormceptor System® is capable of providing oil spill control, but is not intended to be used as a process oil/water separator.
- The Stormceptor System® is an easy-to-maintain device that is much more cost-effective to maintain/clean than many alternative methods such as filtration systems and detention ponds.

Technical Review Committee Recommendations: The TRC, based on the weight of the evidence and using its best professional judgment, finds that:

- Pretreatment guidelines are needed to assess facilities performing at less-than-Basic treatment levels, but adequate to serve as presettling facilities ahead of infiltration treatment. The TRC recommends guidelines be set at 50% removal of 50-micron particles and 80% removal of 125-micron particles. The TRC further recommends these guidelines be applied uniformly to this and all future technology submissions, developed, and included in Ecology's stormwater manual.
- The Stormceptor System®, sized according to Table 1 (above) should provide, at a minimum, equivalent performance to a presettling basin as defined in the most recent *Stormwater Management Manual for Western Washington, Volume V, Chapter 6.*
- Stormceptor Corporation should be given the opportunity to demonstrate, through additional laboratory and field testing, whether the Stormceptor System® can attain Ecology's Basic (TSS) Treatment performance goal.

Findings of Fact:

- Stormceptor Corporation has submitted laboratory data for its Stormceptor System® STC-900, testing silica material prepared to satisfy New Jersey Department of Environmental Protection (NJDEP) standards (mean particle size 97 microns; range 1 to 1000 microns). Weighted TSS removal rates averaged 75% across a range of operating rates (25% to 125% of the design rate), with TSS influent concentrations (97 micron mean particle size) averaging 295 mg/L. Unweighted TSS removal rates averaged 74%, and the removal rate at 285 gpm was 73%.
- Scour tests were run at 125% of the design flowrate with initial sediment loading of 50% and 100% in the lower chamber of the unit. No scouring occurred at 50% loading and minimal scouring occurred at 100% loading.
- Several substantial field data sets were submitted. However, most data do not represent flow-weighted composite samples for individual storms, which are required by the WADOE protocol. The Madison site used flow-weighted composites, and TSS removal rates were in the 20% to 30% range. The Madison site is a maintenance yard with dirt and salt piles and Stormceptor believes the results do not represent typical system performance.
- The system is readily maintained using a vacuum truck.
- There are approximately 15,000 Stormceptor systems in use nationwide and 510 in the Pacific Northwest.

Technology Description:

Design manual and technical bulletins can be downloaded from company's web site.

Recommended Research and Development:

Ecology encourages Stormceptor Corporation to pursue continuous improvements to the Stormceptor System®. To that end, the following actions are recommended:

- No field-testing data are currently available to reliably ascertain the Stormceptor System®'s ability to remove the finer particles (typically represented by Sil-Co-Sil 106, a

U.S. Silica product, in laboratory testing) comprising TSS found on local highways, parking lots, and other high-use areas. Design of future facilities should consider:

a. Sizing for specific applications based on actual particle size distribution in the target runoff. Ecology's TAPE can be used as guidance on the expected particle size distributions for Basic Treatment.
b. Laboratory and field testing to evaluate whether the Stormceptor System® can reliably achieve Basic Treatment criteria.

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